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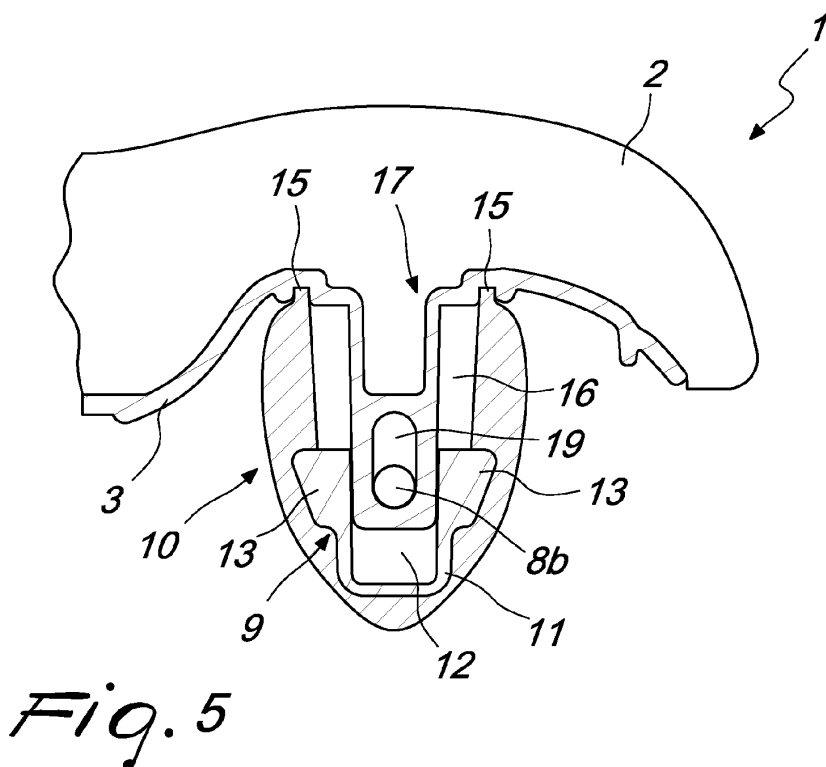
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(54) **Shock-absorbing saddle**

(57) A shock-absorbing saddle (1), particularly for bicycles, of the type comprising an upper padding (2) which is supported on a rigid shell (3).
The saddle (1) comprises a pair of arms, which protrude in a lower region, approximately axially and toward the rear region of the rigid shell (3).
The ends (8b) of the pair of arms can be selectively ar-

ranged at a first rigid appendage (9), which is embedded internally and in a lower region with respect to an elastically deformable body (10).
The elastically deformable body (10) is associated, at the other end, with a second appendage (17), which floats within the first appendage (9) and is jointly connected to the rigid shell (3).



Description

[0001] The present application relates to a shock-absorbing saddle, particularly for bicycles.

[0002] Nowadays it is known to make shock-absorbing saddles for use on bicycles. In this regard Italian patent no. 1,258,588 is known, which discloses a shock-absorbing elastic support, particularly for saddles of bicycles, the distinctive characteristic of which consists in that it comprises an elongated body in elastomeric material provided with end portions that are suitably shaped and molded so as to be compressible in a preferential direction which coincides with its longitudinal axis.

[0003] In particular the shock-absorbing elastic support consists of a main body in elastic material with tapered end portions respectively coupled to the shell of a saddle and, via the use of a metal seat, to a fork coupled to the saddle post of a bicycle.

[0004] The main body, constituting the shock-absorbing elastic support, has an elongated shape with a longitudinal axis of symmetry that coincides with the preferential direction of compressibility of the body itself, the body having an axial through cavity that connects the two ends and which is adapted to slidably accommodate a rod-like element made integral with the shell of the saddle.

[0005] A locking screw with a wide head is rotatably associated in the axial through cavity.

[0006] This known solution suffers many drawbacks, however: as structured and as recited in the text, the shock-absorbing elastic support can perform shifts that are not only along the axis of the axial cavity, but also according to different angles: this involves possible dislocation from the metal seats or from the shell of the saddle and deformations of the shock-absorbing elastic support which can lead to its breakage or to its permanent deformation.

[0007] Furthermore, if the user imposes, on the shock-absorbing elastic support, a weight component which has a different direction to that of the handlebars, then in addition to a deformation of the main body, the screw could also accidentally strike the edge of the metal seats as well, causing a decrease in the shock-absorption and injury to the user because it reaches the end of the stroke before intended.

[0008] This solution, moreover, presents a complexity in the adjustment of the positioning of the screw, since it is necessary to previously unscrew the metal seats from the fork, deform the fork itself in order to then be able to access the screw with the point of the screwdriver and adjust it and, subsequently, screw the metal seats back on.

[0009] The screw, furthermore, is subjected during the use of the bicycle to possible loosening which are due to the considerable stresses to which the main body is subjected, and this could possibly lead to a decrease, possibly significant, of the stroke of the shock-absorbing elastic support, thus defeating its function.

[0010] In any case the presence of the screw limits the compression of the main body, thus limiting the functionality of the shock-absorbing elastic support.

[0011] Also known is EP2051898 which discloses a shock-absorbing device for seating structures and a seating structure comprising the device which consists of a hollow main body, made of a first elastomeric material, which defines an elastically deformable compression chamber, a hollow secondary body, made of a second elastomeric material, which defines an elastically deformable expansion chamber, a fluid channel for connecting the expansion and compression chambers so as to obtain the transfer of fluid from one to the other and vice versa, means for anchoring the main body and the secondary body to the seating structure for the associated device, the connection channel comprising valve means that are adapted to control the flow of fluid between the chambers in response to the elastic deformation thereof.

[0012] This solution however is complex construction-wise, requiring not only that a component be made of different materials with interposition of valve means, but also the insertion and sealing, at the pressure generated during the deformation, of the fluid present between the chambers.

[0013] In addition to the structural complexity, it is high cost, and the shock is absorbed according to an axis substantially perpendicular to the point of application of the force.

[0014] The aim of the present invention is therefore to solve the above mentioned technical problems, eliminating the drawbacks in the cited known art, by devising a saddle that makes it possible to optimally absorb the shocks of all the shifts to which a saddle of a bicycle is subjected during use, while being at the same time structurally and constructionally simple.

[0015] Within this aim, an object of the invention is to provide a saddle that has a great elasticity in the absence of rigid stroke limit elements.

[0016] Another object is to provide a saddle that makes it possible to perform the function of shock-absorption for a saddle as a function of all the directions that can be imposed upon it during the use of the bicycle, so as to increase the shock-absorbing characteristics.

[0017] Another object is to provide a saddle with the above characteristics that has low manufacturing costs and requires a short time for its assembly.

[0018] This aim and these objects, as well as others which will become better apparent hereinafter, are achieved by a shock-absorbing saddle, particularly for bicycles, comprising an upper padding which is supported on a rigid shell, characterized in that it comprises a pair of arms which protrude in a lower region, approximately axially and toward the rear region of said rigid shell, the free ends of which can be arranged selectively at a first rigid appendage, which is embedded internally and in a lower region with respect to an elastically deformable body, which is associated, at its other end, with a second appendage, which floats within said first ap-

pendage and is jointly connected to said rigid shell.

[0019] Further characteristics and advantages of the invention will become better apparent from the detailed description of a particular, but not exclusive, embodiment, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a side view of a saddle according to the invention;

Figure 2 is a front view of the saddle according to the invention;

Figure 3 is a rear view of the saddle;

Figure 4 is a view from below of the saddle;

Figures 5 and 5a are cross-sectional views, taken along the line V-V of Figure 4, respectively of the conditions of non-use and of use of the shock-absorbing step;

Figures 6 and 6a are cross-sectional views, taken along the line VI-VI of Figure 4, respectively of the conditions of non-activation and of activation of the shock-absorbing function;

Figure 7 is a partially cross-sectional isometric view of the saddle.

[0020] In the embodiments that follow, individual characteristics shown in relation to specific examples may in reality be interchanged with other, different characteristics, existing in other embodiments.

[0021] Furthermore, it should be noted that anything found to be already known during the patenting process is understood not to be claimed and to be the subject of a disclaimer.

[0022] With reference to the figures, the reference numeral 1 designates a shock-absorbing saddle, particularly for bicycles, comprising an upper padding 2 which is supported on a rigid shell 3, which is made of plastic material.

[0023] The saddle comprises a pair of arms 4a, 4b, which protrude from a protrusion 5 which is arranged in a lower region with respect to the rigid shell 3 at the region of the tip 6; each of the arms 4a, 4b extends substantially axially and toward the rear region 7 of the rigid shell 3.

[0024] The arms 4a, 4b are substantially mirror-symmetrical with respect to the longitudinal central axis of the saddle and are slightly divaricated so as to assume a substantially ox-horn-like shape, the free ends 8a, 8b of which can be arranged selectively at a first rigid appendage 9, which is embedded internally and in a lower region with respect to an elastically deformable body 10.

[0025] The first appendage 9 is, in cross-section, substantially shaped like an inverted dome, so as to define, in a transverse cross-section, a stem 11, which has a first axial seat 12, and a wing 13, which is perimetric with respect to the stem 11 and on which the free ends 8a, 8b are embedded, the free ends 8a, 8b thus having a portion 14 that affects the first axial seat 12.

[0026] The elastically deformable body 10 is essentially shaped like an inverted ovoid and has an end face 15,

which in an upper region is associated or jointly connected to the rigid shell 3.

[0027] At the end face 15 a second axial seat 16 is provided, which is extended substantially to the underlying pair of wings 13a, 13b.

[0028] A second appendage 17 protrudes inside the second axial seat 16, below the rigid shell 3, and partially floats within the first appendage 9.

[0029] The second appendage 17 has, in proximity to the free end 18 that can be arranged slidingly within the first axial seat 12, an axial groove 19, which is shaped, in cross-section, like a slot within which the end 8a or 8b of the pair of arms 4a, 4b is arranged.

[0030] Operation of the invention is the following: the stresses imposed by the ground on the wheels of the bicycle during use are transmitted to the arms 4a, 4b and from these, through the free ends 8a, 8b, to the first appendage 9 which compresses the elastically deformable body 10 without affecting the second appendage 17 thanks to the presence of the groove 19.

[0031] Similarly, the shifting of the body on the saddle causes the compression of the second appendage 17 which slides freely, to the stroke limit, within the first axial seat 12, thus compressing the elastically deformable body 10.

[0032] In practice it has been found that the invention fully achieves the above mentioned aim and objects, a saddle being obtained that makes it possible to optimally absorb all the shifts to which it is subjected during use, while being at the same time structurally and constructionally simple.

[0033] Lastly, the saddle has low manufacturing costs, requires a short time for its assembly and is easy to assemble.

[0034] Obviously the materials used as well as the dimensions constituting the individual components of the invention can be more relevant according to specific requirements.

[0035] The various different means for effecting certain different functions shall not in any way coexist only in the illustrated embodiment, but may be present per se in many embodiments, even if not illustrated.

[0036] The characteristics indicated as advantageous, advisable or similar may also be lacking or be substituted by equivalent characteristics.

[0037] The disclosures in Italian Patent Application No. TV2010A000107 from which this application claims priority are incorporated herein by reference.

[0038] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A shock-absorbing saddle (1), particularly for bicycles, comprising an upper padding (2) which is supported on a rigid shell (3), **characterized in that** it comprises a pair of arms (4a, 4b) which protrude in a lower region approximately axially and toward the rear region (7) of said rigid shell (3), the free ends (8a, 8b) of which can be arranged selectively at a first rigid appendage (9), which is embedded internally and in a lower region with respect to an elastically deformable body (10), which is associated, at its other end, with a second appendage (17), which floats within said first appendage (9) and is jointly connected to said rigid shell (3).

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2. The saddle according to claim 1, **characterized in that** said pair of arms (4a, 4b) protrudes from a protrusion (5) which is arranged in a lower region with respect to said rigid shell (3) at the region of the tip (6) of said saddle (1), each one of said arms (4a, 4b) being extended substantially axially and toward said rear region (7) of said rigid shell (3), said arms (4a, 4b) being substantially mirror-symmetrical with respect to the longitudinal central axis of said saddle and being slightly divaricated so as to assume a substantially ox-horn-like shape.

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3. The saddle according to claims 1 and 2, **characterized in that** the free ends (8a, 8b) of said arms (4a, 4b) can be arranged selectively at a first rigid appendage (9), which is embedded internally and in a lower region with respect to an elastically deformable body (10).

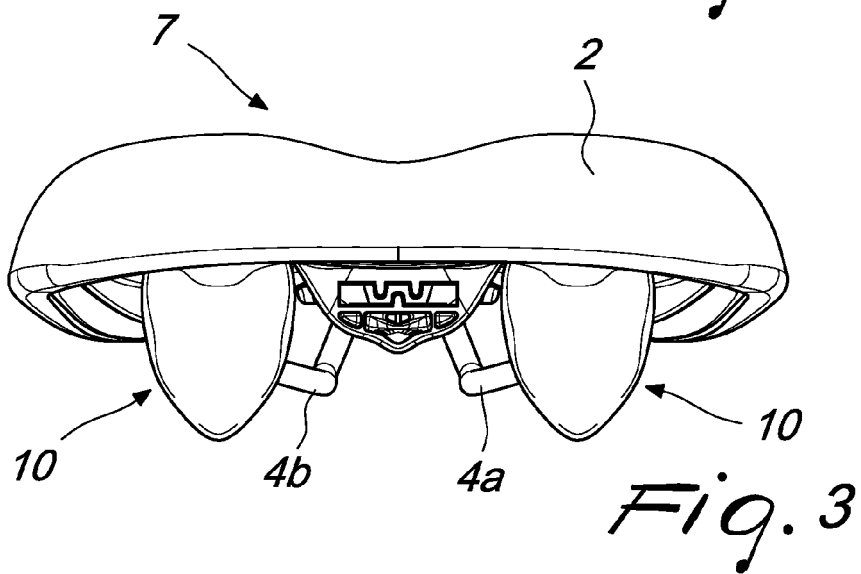
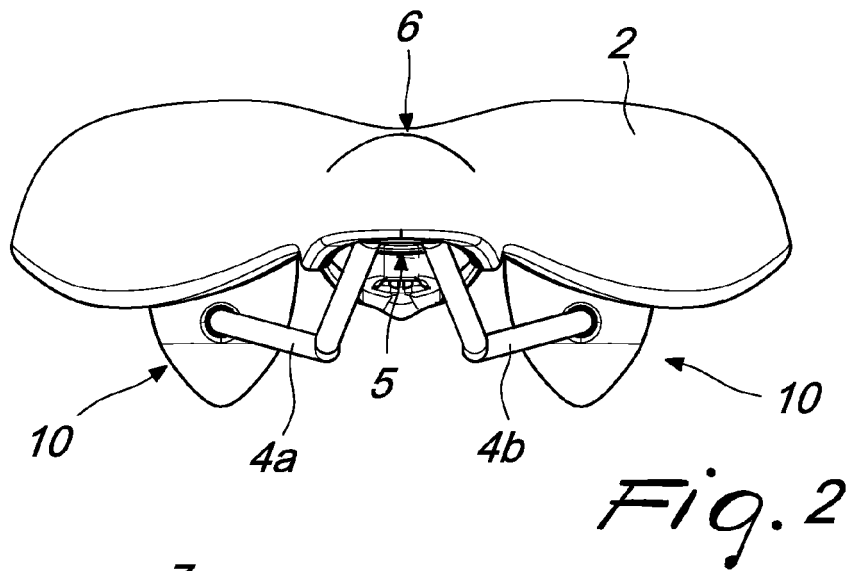
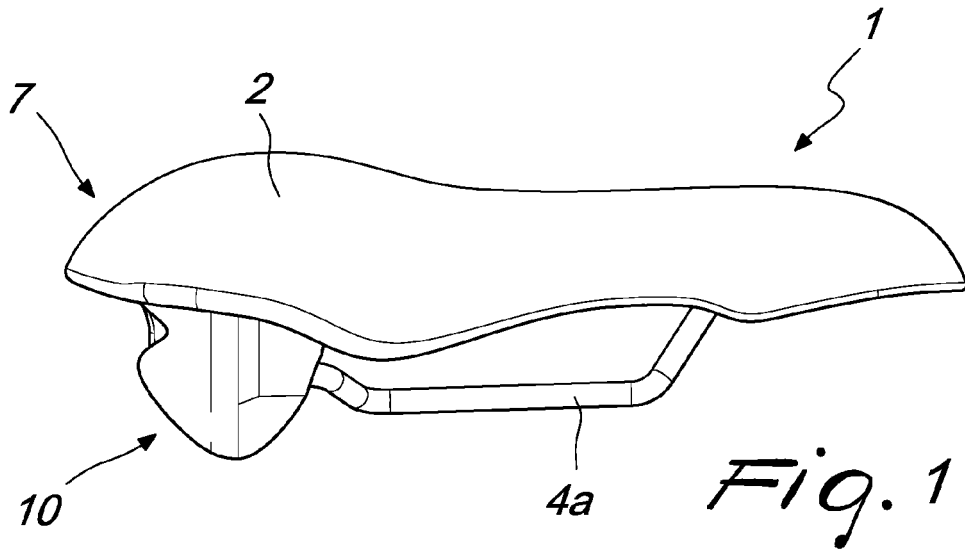
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4. The saddle according to claims 1 and 3, **characterized in that** said first appendage (9) is, in cross-section, substantially shaped like an inverted dome, so as to define, in a transverse cross-section, a stem (11), which has a first axial seat (12), and a wing (13), which is perimetric with respect to said stem (11) and on which said free ends (8a, 8b) are embedded, said free ends having a portion (14) that affects said first axial seat (12).

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5. The saddle according to claims 1 and 4, **characterized in that** said elastically deformable body (10) is essentially shaped like an inverted ovoid and has an end face (15) which in an upper region is associated with, or jointly connected to, said rigid shell (3), at said end face (15) a second axial seat (16) being provided, which is extended substantially to said underlying pair of wings (13a, 13b).

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6. The saddle according to claims 1 and 5, **characterized in that** a second appendage (17) protrudes inside said second axial seat (16), below said rigid shell (3), and partially floats within said first append-

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7. The saddle according to claims 1 and 6, **characterized in that** said second appendage (17) has, proximate to the free end (18) that can be arranged slidably within said first axial seat (12), an axial groove (19), which is shaped, in cross-section, like a slot within which the end (8a) or (8b) of said pair of arms (4a, 4b) is arranged.

age (9).



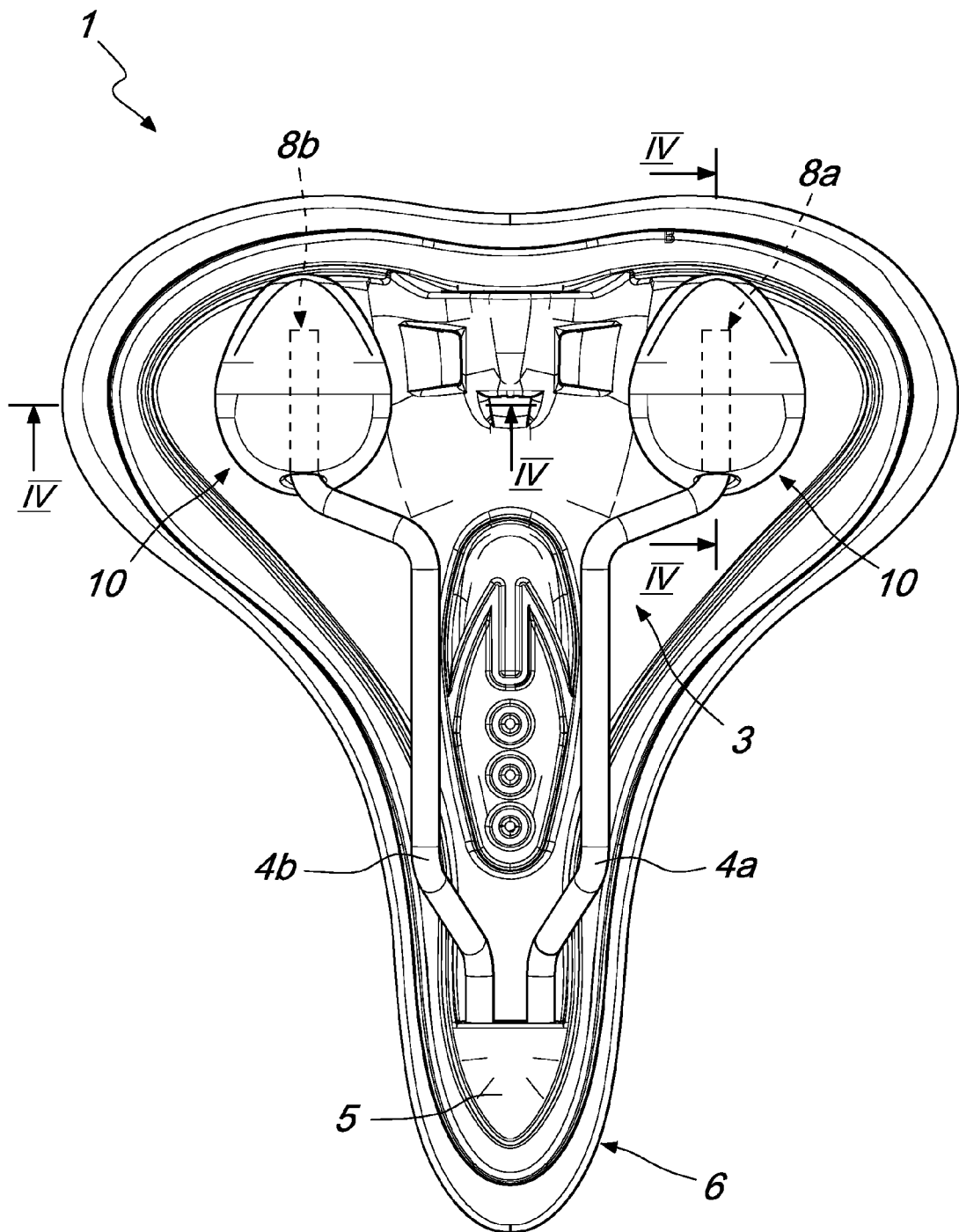


Fig. 4

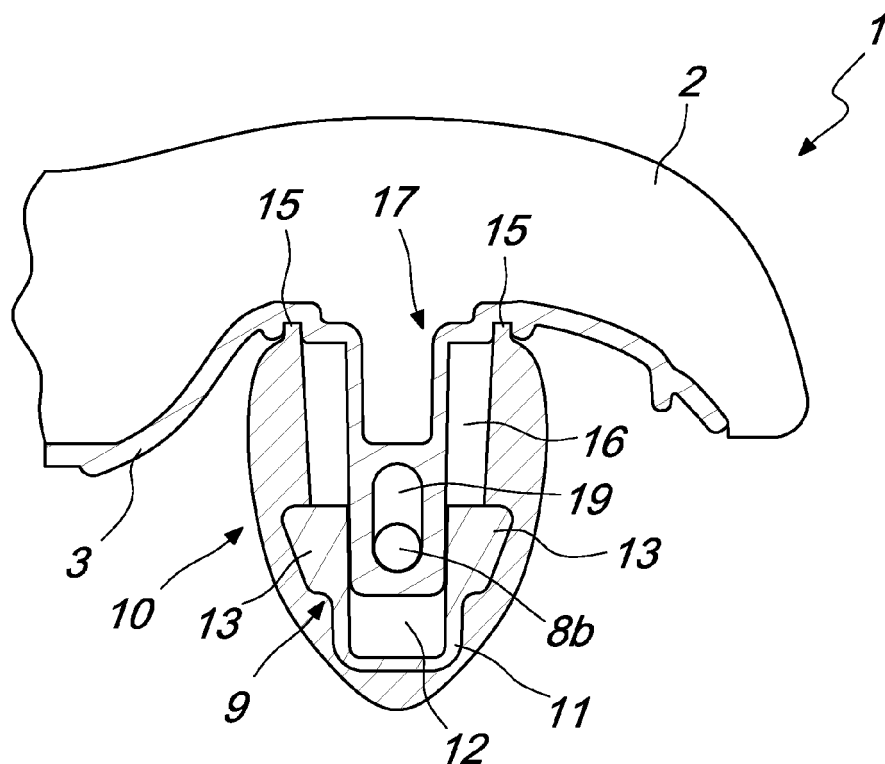


Fig. 5

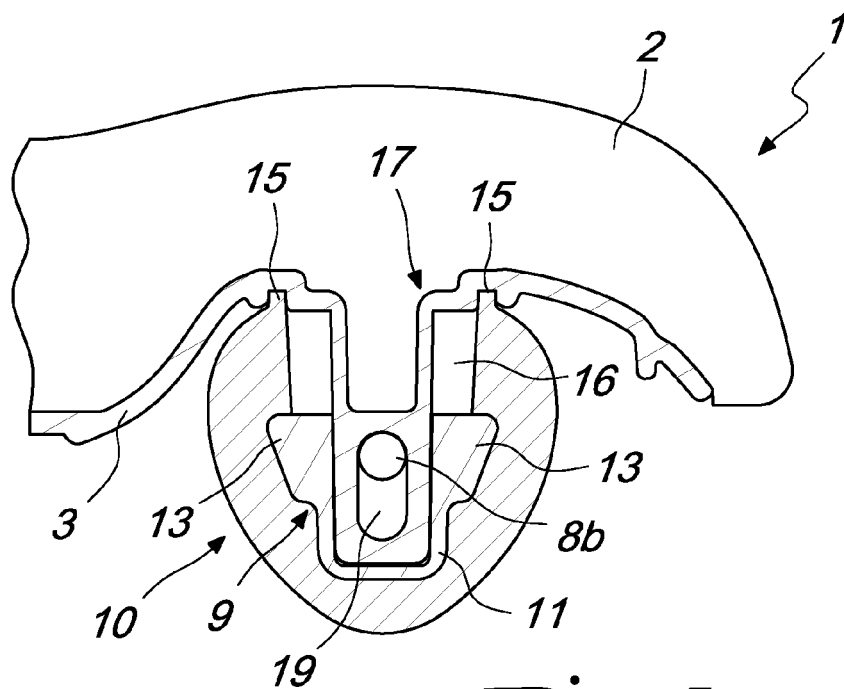
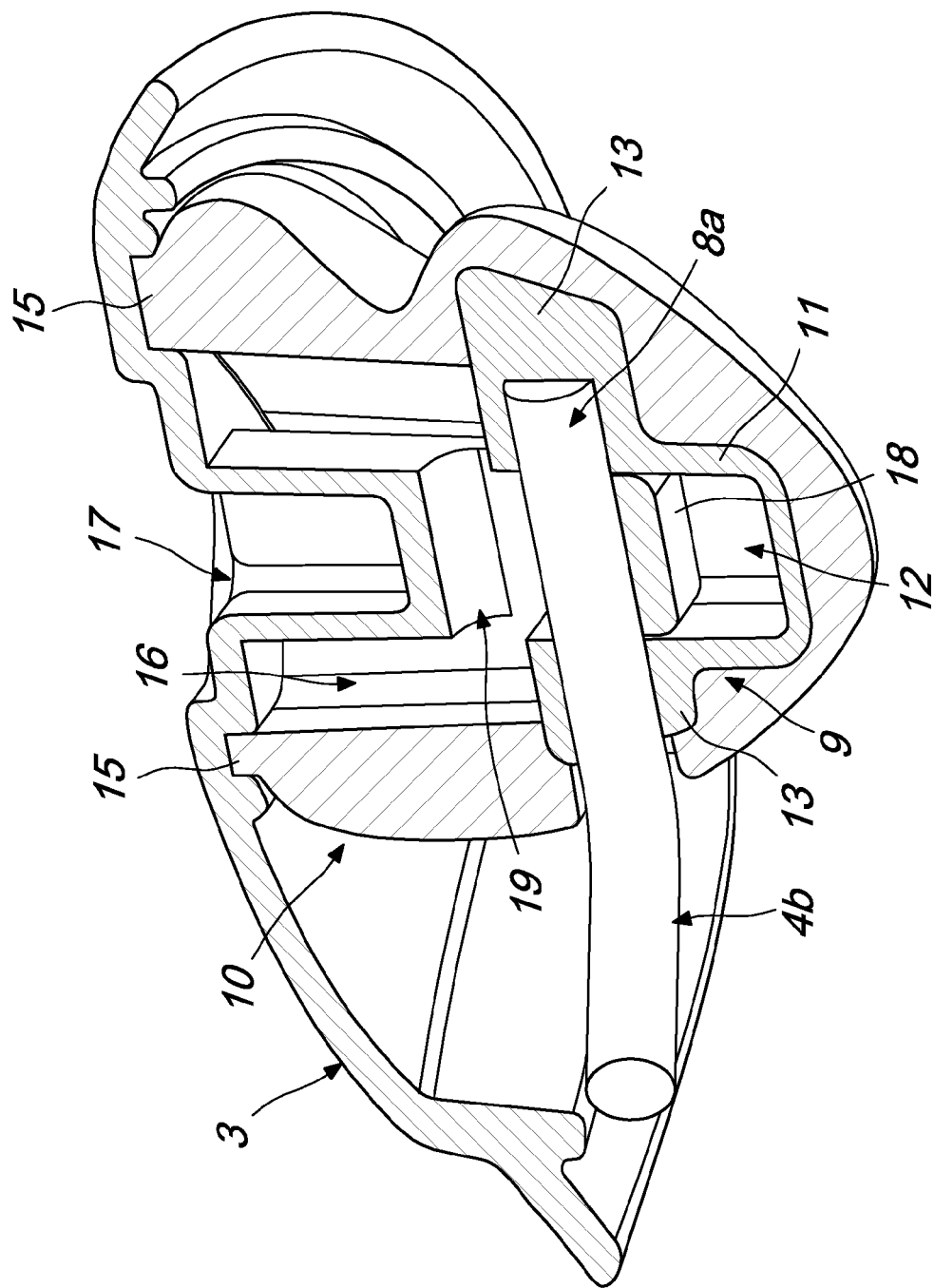


Fig. 5a





EUROPEAN SEARCH REPORT

Application Number
EP 11 16 9957

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 26 July 2011	Examiner Flori, Massimiliano
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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